TEXTILE FABRIC

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a water and weather proof textile fabric and, more particularly to such a textile fabric that is suitable for use to make luggage, bags, and shoes.

2. Description of the Related Art

For the advantages of light weight and comfort touch, textile fabric is intensively used to make luggage, sports bags, backpacks, and shoes. The structural strength of a textile fabric is determined subject to the quality of the base fabric material, the diameter of the threads, the thread count, and the weaving method. Well control of these factors makes the textile fabric strong enough, preventing an excessive extension under a load. Conventionally, a piece of textile product is made by directly cutting a cloth of fabric subject to a predetermined pattern and then making the cut piece of fabric into the finished product by stitching. A textile product made according to this method is not highly acceptable to consumers because it cannot protect the user against water and strong wind. In order to improve this drawback, a back coating layer may be coated on the back side of the fabric, i.e., to form a thin layer of polymeric substance on the fabric, or to coat the fabric with a layer of synthetic material. The back coating layer protects against water, reinforces the strength of the fabric, and gives a comfort touch. If to make the product elastic (calenderable), the polymeric coating must be elastic, i.e., stretchable. This kind of polymeric coating can be prepared from a polymeric material of monomer type. Normally, copolymers of different types of monomers are synthesized to provide the desired properties. Further,

softener may be added to enhance the softness and flexibility of the polymeric material.

Among polymers, the following materials are commonly used for making the aforesaid back coating layer: PVC (polyvinyl chloride) and its copolymers, polyacrylate and its copolymers, PA (polyamide), synthetic rubber and its copolymers, and silicon rubber. During evaporation of solvent in the system, polymeric material dissolved or dispersed in organic solvent forms a continuous film of polymers. Alternatively, the polymeric material can be applied to the fabric as water dispersion element. When water evaporated from dispersion element, a continuous polymeric film is formed on the fabric. If thermoplastic polymer is used, it can be applied to the fabric when melted.

According to conventional technology, PVC is commonly used for making a back coating on a fabric. However; because PVC generates dioxin and other toxic gasses when burnt, it is harmful to the environment and human beings. Therefore, the use of PVC to make a back coating on a fabric is gradually prohibited. Further, PVC material is relatively heavy, not suitable for making luggage, bags, and shoes of light weight.

PE (polyethylene), EVA (ethylene-vinyl-acetate copolymer), or the mixture of PE and EVA may be used for making a back coating for fabric. However, these materials have the properties of plastics, i.e., the drawbacks of high hardness and rigidity. A fabric coated with a back coating of one of these materials is less flexible, and tends to wrinkle. Therefore, the aforesaid materials are not commonly used fabric materials for making luggage, bags, and shoes.

Therefore, it is desirable to provide a textile fabric of low pollutant, high softness and elasticity, and good waterproof property.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is therefore the main object of the present invention to provide a textile fabric, which is soft, elastic, and water proof, and practical for use to make luggage, bags, and shoes.

According to the present invention, the textile fabric comprises a fabric base layer and a back coating layer. The fabric base layer is made from nylon or polyester, having a front side and a back side. The back coating layer has a bonding side bonded to the back side of the fabric base layer, and a back body side. The back coating layer is prepared from TPU (thermoplastic polyurethane), PS (polystyrene), EVA (ethylene vinyl acetate), processing oil, plastics, and additives subject to a predetermined formula.

A bonding layer may be selectively used and bonded between the fabric base layer and the back coating layer. The bonding layer has a first side bonded to the back side of the fabric base layer, and a second side bonded to the bonding side of the back coating layer. Preferably, the bonding layer is prepared from PMMA (polymethyl methacrylate), viscosity index improver, additives, and toluene.

Comparing to conventional methods, the invention uses TPU (thermoplastic polyurethane), PS (polystyrene) and EVA (ethylene vinyl acetate) to substitute for polyvinyl chloride, reducing possible pollution to environment. Further, the back coating layer prepared from the aforesaid materials is soft and elastic, not easy to wrinkle, and more particularly, water proof. When using the textile fabric to make luggage, bags, shoes, etc., either the fabric base layer or the back coating layer can be exposed to the outside.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view of a textile fabric constructed according to the present invention.

FIG. 2 is a block diagram showing the textile fabric fabrication flow according to the present invention.

FIGS. 3A and 3B are schematic drawings showing the bonding layer processing and back coating processing according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, a textile fabric **1** is shown comprising a fabric base layer **10** and a back coating layer **30**.

The fabric base layer **10** is made from nylon or polyester, having a front side **102** and a back side **104**.

A bonding layer **20** may be selectively provided between the fabric base layer **10** and the back coating layer **30**. The bonding layer **20** has a first side **202** and a second side **204**. The first side **202** is bonded to the back side **104** of the fabric base layer **10**. The bonding layer **20** may be prepared by means of one of various known processing methods and subject to one of various known formulas. Preferably, the bonding layer **20** is prepared from PMMA (polymethyl methacrylate), viscosity index improver, additives, and toluene.

The back coating layer **30** has a bonding side **302** and a back body side **304**. If the aforesaid bonding layer **20** is not used, the bonding side **302** is bonded to the back side **104** of the fabric base layer **10**. In case the aforesaid bonding layer **20** is used, the bonding side **302** is bonded to the second side **204** of the bonding layer **20**. The

material for the back coating layer **30** is prepared from TPU (thermoplastic polyurethane), PS (polystyrene), EVA (ethylene vinyl acetate), processing oil (long chain dihydric alcohols, short chain dihydric alcohols), plastics, and additives subject to a predetermined proportion, and then applied to the fabric base layer **10** (or applied to the bonding layer **20** if the bonding layer **20** is used) by means of any of a variety of processing methods (this will be described further).

When using the textile fabric **1** to make luggage, bags, shoes, etc., the front side **102** of the fabric base layer **10** or the back body side **304**.of the back coating layer **30** can be exposed to the outside.

Referring to FIG. 2, the fabrication of the textile fabric **1** includes the steps of material preparation, bonding layer processing, back coating processing, bonding and embossing, and finished product roll-up. The steps of material preparation, bonding and embossing, and finished product roll-up are similar to the conventional textile fabric fabrication methods. The steps of bonding layer processing and back coating processing are outlined hereinafter.

As shown in FIG. 3A, a continuous sheet of fabric **401** (i.e., the aforesaid fabric base layer) is delivered over applicator wheels **402** that apply a bonding agent **403** to one side of the fabric **401**, and at the same time scrappers **402a** remove excessive bonding agent **403** from the periphery of the applicator wheels **402**. The bonding agent coated fabric **401** is then delivered through a baking oven **404** and dried, and then the well dried bonding agent coated fabric **401** is rolled up for further use. The bonding agent **403** is obtained from a mixture containing PMMA, viscosity index improver (0~120HPR), additives (0~20PHR), and toluene (100~500PHR).

Thereafter, prepare a back coating material **405** containing TPU, PS, EVA (100PHR), processing oil (0~120PHR), plastics (0~100PHR), and additives

(0~20PHR). The prepared back coating material **405** is mixed by a screw and then melted (melting index over 3g/min), and then rolled by a set of hot rollers **406** into a sheet of back coating **407** at temperature within about 90~160°C, as shown in FIG. 3B, and then the sheet of back coating **407** and the bonding agent **403** coated fabric **401**, which is preheated, are bonded together through a set of impression rollers **408**, and then the textile fabric thus obtained is delivered through a set of cooling rollers **409** and cooled down. The surface of the back coating layer, i.e. the back coating **407**, is embossed when it passes through the impression rollers.

While only one embodiment of the present invention has been shown and described, it will be understood that various modifications and changes could be made thereunto without departing from the spirit and scope of the invention.